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ABSTRACT

Because Q-technique is as appropriate for use with visual and design items as for use with words, it is not stymied by the topics one is likely to encounter in graphics research. In particular Q-technique is suitable for studying the so-called "congeniality" of typography, for various copytesting usages, and for multivariate graphics research. The specific fields of graphics research in which Q-technique might be most helpful are typography, color, photographs, layouts, design principles, and attitudes to new technology. Although Q is a relatively complex methodology, its relevance to graphics research makes its presence in the arsenal of graphics researchers important. (Author/FL)

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Q-TECHNIQUE AND GRAPHICS RESEARCH

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Q-methodology, developed by William Stephenson (3), has proved itself to be a useful tool in communications research. Q taps the subjectivity of persons and in a quantified way forms opinion publics through factor analysis. Full Q-methodology as espoused by Stephenson is a complete system of theory, assumptions and statistical procedures that is especially helpful in forging new communication theories and testing current hypotheses. Part of Q-methodology is Q-technique, the rank-ordering or sorting procedure used to provide the raw data for factor analysis. This paper does not purport to be a definitive treatise on the applicability of Q-methodology to graphics research, but rather it suggests ways in which Q-technique can be used to investigate the virgin territories of graphics research. Because Q-technique is as appropriate for measuring visual and design items as it is for words, the technique is not stymied by the topics one is likely to encounter in graphics research, viz., typography, artwork, photography, color, layouts and design principles.

Q-Technique

It is not within the scope of this paper to provide a detailed description of Q-technique, but a brief explanation is in order for those unfamiliar with it. The heart of Q-technique is the sorting of items by persons into a rank-ordered, bi-polar pattern. The items may be verbal statements, pictures, objects, or any graphic element. Then through factor analysis people are clustered together onto factors. Each factor represents a group of persons who sorted the items in a similar way. One can then have the computer display an array of items that typifies each group or factor. By analysing different group arrays and the demographic differences between groups we can begin to piece together hypotheses that explain the differences. The best program to process Q-sorts is Van Tubergen's QUANAL, which my research (1, p. 117) has shown not only to be tailored to Q-technique, but also to be more computationally efficient than such software packages as SPSS and SAS. Q-technique is quite flexible. The items can be selected to represent a theory or hypothesis, if one exists. A number of persons could sort a set of items, or a single person could sort a set of items under different conditions of instruction. For instance, one might ask a person to sort the typefaces on a continuum from most legible to least legible; then the person could be asked to sort the typefaces on another continuum from most interesting to least interesting. In

this way one could find out which conditions of instruction clustered together, or in this case which typographic characteristics produced similar sorting patterns. Of course, several persons could sort items with multiple conditions of instruction.

Q-technique is not without its weaknesses. Since it is a small sample technique and the sample of items and persons are usually purposive, Q does not lend itself to projections onto a population. One cannot say definitively that the patterns emerging from the factor analysis are the only opinion patterns that exist, nor can one say that a factor represents a certain percentage of the populations. However, Q is an excellent prelude to doing research with a large, random sample. Further, it often does not matter what population percentage each subjective pattern represents: we may be interested only in identifying the patterns. Q-technique has been criticized for forcing people to sort items in a restricted pattern. While it is true that one usually sets a certain number of categories and asks the subject to sort items onto a pre-determined normal curve pattern (from, say, +5 to -5), this has been shown to have little effect on the overall factor analysis. Q-technique has also been criticized because it is harder for subjects to master than other forms of scaling or questionnaires. But my experience has been that persons are almost always challenged and fascinated by Q-sorting. I once conducted a

Q-sort and questionnaire by mail that had a response rate of 88%, and other researchers using Q have reported little resistance.

Research Needs in Graphics

Much of graphics research to date has explored the issue of legibility, as is well documented and summarized by Rehe (2). The subjective aspects of graphics have received much less attention. One of the few explorations into the so-called "congeniality" of type was conducted by Wendt (5), using semantic differential as a methodology. Though Tinker and Paterson found a correlation between the pleasingness of type and its legibility (4), more exploration of this relationship is needed.

A weakness in typographic and graphics research to date has been the paucity of multivariate studies: more often than not graphic elements have been studied one by one. More research into the patterns and interactions of graphic elements is needed.

Advertisers, editors and others who make use of graphics need more and better copytesting techniques that include all the elements in the finished production: copy, art and typography. This means the development of applied copytesting techniques beyond the need for better graphics theory.

Applications of Q to Graphics Research

Q-technique could be a fruitful methodology for all of the areas of graphics research needs cited above. Since Q clusters persons rather than tests or scales, it can be quite helpful in researching the attitudes of graphics' audience. Because Q employs factor analysis, it qualifies as a multivariate technique, capable of handling many graphics' dimensions at once. And though it is more difficult to analyze than many simple copytesting techniques, Q could be gainfully employed at copytesting.

Some of the areas in which Q-technique might be most helpful include:

(1) TYPOGRAPHY. Perhaps the most obvious area of graphics research for which Q-technique could be employed is typography. Q could augment legibility research by having readers sort a set of typographic samples with the condition of instruction, "Sort these into a set of categories from 'most easy to read' to 'least easy to read.'" Using Q, one could also ask a reader to determine which typefaces or letters he or she could read most quickly or least quickly. The Q-sort itself could be composed of individual letters, blocks of type (preferably "Greek type," so the subject matter would not become a contaminating variable), type set in varying point sizes, different leadings or line widths. One could explore the subjective dimension of such typographic decisions as justified or unjustified columns,

serif or sans-serif type, capitals or lower case, and narrow width columns or wide width columns. One would expect the results of these inquiries to parallel the findings of "objective" legibility research.

An even more fruitful area of typographic research for Q-technique would be studying the so-called "congeniality" of type. This rarely explored area is purely subjective and thus lends itself to a psychometric technique like Q. One might determine through Q-technique whether some of the descriptors Wendt (5) used in his study, such as "elegant" and "modern" are universally perceived characteristics of a given typeface or whether different clusters of persons perceive them differently. One could either have subjects sort congeniality characteristics of type or sort the typefaces themselves with the congeniality characteristics built into the condition of instruction.

(2) COLOR. Stephenson used Q-methodology to ascertain color preferences very early in his development of Q-methodology, though his study was more for artistic than graphics research. With the increasing availability of color in publications, much more research needs to be done to study the impact of color. Mies van der Rohe's famous design principle "less is more" seems to have been lost in the shuffle as designers frolic in ROP color. Q could be used to sort out the basic principles of effective color usage.

By having subjects sort various layouts employing color, we could use Q-technique to test the most effective deployment of color from a subjective standpoint. Color is used for affective purposes, so Q-sorts might be structured to test current psychological theories about the subjective meaning of color. As with typography, the color variables could either be built into the sort or be tested through various conditions of instruction.

(3) PHOTOGRAPHS. Q-technique has been frequently employed to test photos in one way or another. The actual photographs can be sorted with whatever condition of instruction is germane to the research. This can be especially helpful when copytesting photos for use in advertising graphics, since the subjective and subliminial aspects of a photo may be as important as its subject. Photos can be tested either independently or as part of a layout. One might ask a subject to sort photographs according to their visual impact, their appropriateness for the subject matter at hand, their affective characteristics or their good and bad taste. In addition the graphics researcher could use Q-technique to decide which kinds of photos lend themselves to special engraving techniques, such as line screens, duotones, posterization or mezzotint.

(4) LAYOUTS. Entire page layouts or even comprehensives can be studied using Q-technique. However, for convenience one may want to reduce page layouts or comps

that exceed 8" x 10". Much has been written about the effectiveness of horizontal or vertical layouts, grid systems and the like, but little in the way of hard research has been done in this area. Conditions of instruction could be set up to measure such subjective qualities of layouts as visual impact, style, simplicity, clarity and focus. As with other graphics research areas, Q-technique would be helpful in determining whether there is a consensus as to the most effective layouts or whether there are several distinct reactions to comps and layouts.

(5) DESIGN PRINCIPLES. Visual literacy, as a topic, has come of age. Grammars for the eye have been created, and educators urge that children be taught visual literacy alongside verbal literacy. While those of us interested in graphics can applaud this burgeoning interest in visual literacy, one must bemoan the lack of a significant body of research on the topic. With design principles and theories we are essentially at a level parallel to when McLuhan pronounced, "The medium is the message"--without a scrap of quantitative evidence. Much of what passes for visual grammar may, in fact, evolve into sound theory with the coming of research. Q-technique could provide a helpful tool for the Doubting Thomases among us, for one of the advantages of Q is that one could build a proposed visual grammar into a Q-sort and then test the results. Because Q is well suited to "abductive" research, to use Charles

Peirce's term, it would provide an ideal methodology for the development of hypotheses and theory in this area.

(6) ATTITUDES TO NEW TECHNOLOGY. An area of keen interest to most of us involved in graphics education is the impact of the new computer technology on mass communications in general and graphics in particular. Some studies have explored the differences between new and old technologies, including at least one during this convention. More work needs to be done to study the impact of these technologies on the professional communicators who will be using them. A Q-study of attitudes toward new technological innovations may uncover subtle differences in adopters' perspectives, easing the way for the introduction of still newer technologies.

The six areas of potential research listed above are not necessarily exhaustive, nor are they spelled out in great detail. What was attempted was to demonstrate the applicability of Q-technique to the special needs of graphics research. It is hoped that in future research sessions of the Graphics Division of A.E.J. we will begin to see some actual applications of Q to graphics research.

Analysis

The results of Q-technique are factor analysed by a computer program (except for the most masochistic).

Programs such as QUANAL, mentioned above, give the most helpful kind of output since sorts representing the types or patterns that emerge from the factor analysis are then printed out. This is invaluable for interpreting the precise nature of the emerging factors. If some attempt is made to gather at least minimal demographics from the subjects, a profile of the subjects loaded most highly on each factor can be developed and the factor interpretation further sharpened.

One of the biggest drawbacks of Q-technique is that it is more difficult for the researcher to master than many other techniques. A growing body of literature on Q is addressing that problem, including a new journal devoted to Q--"Operant Subjectivity" (edited by Steven R. Brown, Dept. of Political Science, Kent State University, Kent, OH 44242). The classic text on Q is, of course, Stephenson's book (4), but several research texts give briefer and more helpful attention to the basics of Q-technique. Though Q-technique may be complex, its relevance to graphics research makes its presence in the arsenal of graphics researchers important.

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